

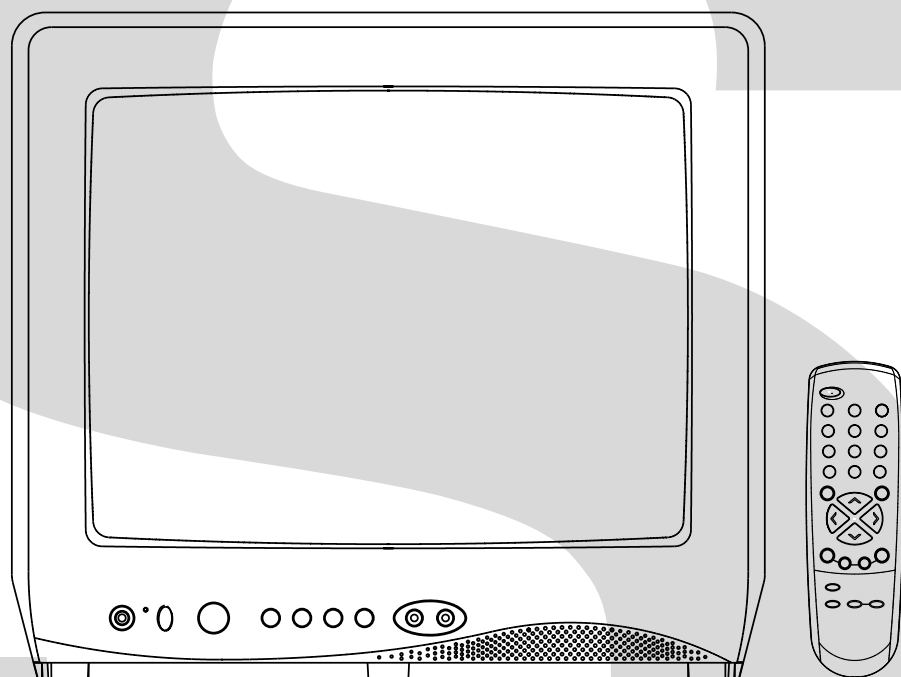
# TOSHIBA

FILE NO. 050-200111

## SERVICE MANUAL

## COLOR TELEVISION

# 13A21C



## SERVICING NOTICES ON CHECKING

### 1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

### 2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

### 3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.

Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a  $\triangle$  mark, the designated parts must be used.

### 4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

### 5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

### 6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.

Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.

Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

### 7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

#### (INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the external exposure metal [Note 2] should be more than 1M ohm by using the 500V insulation resistance meter [Note 1].
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

#### [Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

#### [Note 2]

External exposure metal: Antenna terminal  
Earphone Jack

## HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

#### 1. MODEL NUMBER and VERSION LETTER

The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.

#### 2. PART NO. and DESCRIPTION

You can find it in your SERVICE MANUAL.

## IMPORTANT

Inferior silicon grease can damage IC's and transistors.

When replacing an IC's or transistors, use only specified silicon grease (YG6260M).

Remove all old silicon before applying new silicon.

# GENERAL SPECIFICATIONS

G-1	TV System	CRT	CRT Size / Visual Size	13 inch / 335.4mmV	
			CRT Type	Normal	
			Deflection	90 degree	
		Color System	Magnetic Field	BV/BH	+0.45G/0.18G
			Speaker	Position	NTSC
		Sound Output	Speaker	1Speaker	
			Position	Bottom	
			Size	3 Inch	
			Impedance	8 ohm	
		NTSC3.58+4.43 /PAL60Hz	MAX	1.0 W	
10%(Typical)	0.8 W				
G-2	Tuning System	Broadcasting System	System	US System M	
			Tuner and Receive CH	System	1Tuner
			Destination	Others	
		Intermediate Frequency	Tuning System	F-Synth	
			Input Impedance	VHF/UHF 75 ohm	
			CH Coverage	2 - 69, 4A, A-5 - A-1, A - 1, J - W, W+1 - W+84	
			Picture(FP)	45.75MHz	
		Preset CH	Sound(FS)	41.25MHz	
			FP-FS	4.50MHz	
		Stereo/Dual TV Sound		No	
Tuner Sound Muting		Yes			
G-3	Power	Power Source	AC	120V AC 60Hz	
			DC	-	
		Power Consumption	at AC		
			Stand by (at AC)	Per Year	54 W at AC 120 V 60 Hz 5 W at AC 120 V 60 Hz -- kWh/Year
		Protector	Power Fuse	Yes	
G-4	Regulation	Safety	CSA		
		Radiation	DOC		
		X-Radiation	HWC		
G-5	Temperature	Operation	+50C ~ +400C		
		Storage	-200C ~ +600C		
G-6	Operating Humidity		Less then 80% RH		
G-7	On Screen Display	Menu	Menu Type	Yes	
			Picture	Character	
			Contrast	Yes	
			Brightness	Yes	
			Color	Yes	
			Tint	Yes	
			Sharpness	Yes	
			Audio		No
				Bass	No
				Treble	No
				Balance	No
				BBE On/Off	No
			CH Set Up	Stable Sound On/Off	No
					Yes
				TV/CABLE(CATV)	Yes
				Auto CH Memory	Yes
			Language	Add/ Delete	Yes
					Yes
			V-chip		No
				CH Label	No
				Favorite CH	No
				Color Stream DVD/DTV	No
			Control Level		Yes
				Volume	Yes
				Brightness	Yes
				Contrast	Yes
				Color	Yes
				Tint (NTSC Only)	Yes
				Sharpness	Yes
				Tuning	No
				Bass	No
				Treble	No
				Balance	No
Back Light	No				
Stereo,Audio Output,SAP	No				
Video	Yes				
Color Stream	No				
Channel(TV/Cable)	Yes				
CH Label	No				
Sleep Timer	Yes				
Sound Mute	Yes				
V-chip Rating	No				

# GENERAL SPECIFICATIONS

G-8	OSD Language	OSD Language Setting		English	French	Spanish	
G-9	Clock and Timer	Sleep Timer	Max Time	120 Min			
			Step	10 Min			
		On/Off Timer	Program(On Tim / Off Tim)		No		
		Wake Up Timer			No		
	Timer Back-up (at Power Off Mode)	more than	--	Min	Sec		
G-10	Remote Control	Unit		RC-EH			
		Glow in Dark Remocon			No		
		Format		Toshiba			
		Custom Code		40-BF h			
		Power Source	Voltage(D.C)	3V			
			UM size x pcs	UM-4 x 2 pcs			
		Total Keys		27	Keys		
		Keys	Power		Yes		
			1		Yes		
			2		Yes		
			3		Yes		
			4		Yes		
			5		Yes		
			6		Yes		
			7		Yes		
			8		Yes		
			9		Yes		
			0		Yes		
				100		No	
			CH Up		Yes		
			CH Down		Yes		
			Volume Up		Yes		
			Volume Down		Yes		
			TV/Caption/Text		Yes		
			CH1/CH2		Yes		
			TV/Video(TV/AV)		Yes		
			CH RTN/CH ENT(Quick View)		Yes		
			Sleep		Yes		
			RE Call(Call)		Yes		
			Reset		Yes		
			Menu		Yes		
			Enter		Yes		
			Mute		Yes		
			Exit			No	
	MTS(Audio Select)			No			
	Set +		Yes				
	Set -		Yes				
	Multi Brand Keys	CH Up(VCR)		No			
		CH Down(VCR)		No			
		Pause/Still		No			
		TV/VCR(VCR)		No			
		Code		No			
		FF		No			
		Rew		No			
		Rec		No			
		Play		No			
		Stop		No			
		TV		No			
		VCR		No			
		Cable		No			

# GENERAL SPECIFICATIONS

<b>G-11</b>	<b>Features</b>	Auto Degauss	Yes			
		Auto Shut Off	Yes			
		Canal+	No			
		CATV	Yes			
		Anti-theft	No			
		Rental	No			
		Memory(Last CH)	Yes			
		Memory(Last Volume)	Yes			
		V-Chip	No			
		Type	USA,ORION Type			
		BBE	No			
		Auto Search	No			
		CH Allocation	No			
		SAP	No			
		Channel Lock	No			
		Just Clock Function	No			
		Game Position	No			
		CH Label	No			
		VM Circuit	No			
		Full OSD	No			
		Premiere	No			
		Comb Filter	No			
		Lines				
		Auto CH Memory	Yes			
		Hotel Lock	No			
		Closed Caption	Yes			
		Stable Sound	No			
		FBT Leak Test Protect	Yes			
		Favorite CH	No			
		<b>G-12</b>	<b>Accessories</b>	Owner's Manual	Language W/ Warranty	English/French No
				Remote Control Unit		Yes
Rod Antenna	Poles Terminal			No		
Loop Antenna	Terminal			No		
U/V Mixer				No		
DC Car Cord (Center+)				No		
Guarantee Card				No		
Warning Sheet				No		
Circuit Diagram				No		
Antenna Change Plug				No		
Service Station List				Yes		
Important Safety Instruction				Yes		
Dew/AHC Caution Sheet				No		
AC Plug Adapter				No		
Quick Set-up Sheet				No		
Battery	UM size x pcs OEM Brand			Yes UM4 x 2 No		
AC Cord				No		
AV Cord (2Pin-1Pin)				No		
Registration Card (NDL Card)				Yes		
ESP Card				No		
PTB Sheet				No		
300 ohm to 75 ohm Antenna Adapter				No		
Envelop				Yes		

# GENERAL SPECIFICATIONS

<b>G-13</b>	<b>Interface</b>	Switch	Front	Power	Yes	
				System Select		No
				Main Power SW		No
				Sub Power		No
				Channel Up/Reset	Yes	
				Channel Down/Enter	Yes	
				Volume Up/Set Up	Yes	
			Volume Down/Set Down	Yes		
			MENU=Volume Up+Volume Down	Yes		
			Rear	AC/DC		No
				TV/CATV Selector		No
				Degauss		No
				Main Power SW		No
				Indicator	Power	Yes
		Stand-by				No
		On Timer				No
		Terminals	Front	Video Input		RCA
				Audio Input		RCA x 1
				Other Terminal		Ear Phone
			Rear	Video Input(Rear1)		No
				Video Input(Rear2)		No
				Audio Input(Rear1)		No
				Audio Input(Rear2)		No
				Video Output		No
				Audio Output		No
				Euro Scart		No
Color Stream				No		
Diversity				No		
Ext Speaker				No		
DC Jack 12V(Center +)				No		
VHF/UHF Antenna Input				F Type		
AC Outlet				No		
<b>G-14</b>	<b>Set Size</b>				Approx. W x D x H (mm)	362 x 360 x 320.5
<b>G-15</b>	<b>Weight</b>				Net (Approx.)	9.5 kg (20.9 lbs)
					Gross (Approx.)	11.0kg (24.4lbs)
<b>G-16</b>	<b>Carton</b>	Master Carton		Content	--- Sets	
				Material	--/--	
				Dimensions W x D x H(mm)	-- x -- x --	
				Description of Origin	No	
					Yes	
		Gift Box		Material	Double/Brown	
				Dimensions W x D x H(mm)	440 x 408 x 380	
				Design	As per Buyer's	
				Description of Origin	Yes	
		Drop Test			Natural	
					Dropping	
					At 1 Corner / 3 Edges / 6 Surfaces	
				Height (cm)	62	
				Container Stuffing	866 Sets/40' container	
<b>G-17</b>	<b>Cabinet Material</b>		Cabinet Front	PS 94V0 DECABROM		
			Cabinet Rear	PS 94V0 DECABROM		

# DISASSEMBLY INSTRUCTIONS

## 1. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

- \* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
- \* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

### REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 1-1.)**

Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.

A cracking noise will be heard as the voltage is discharged.

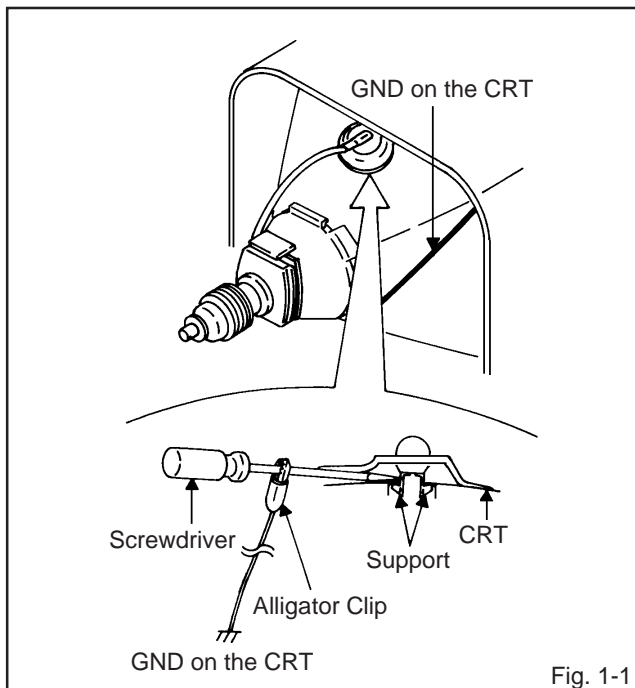


Fig. 1-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 1-2.)**

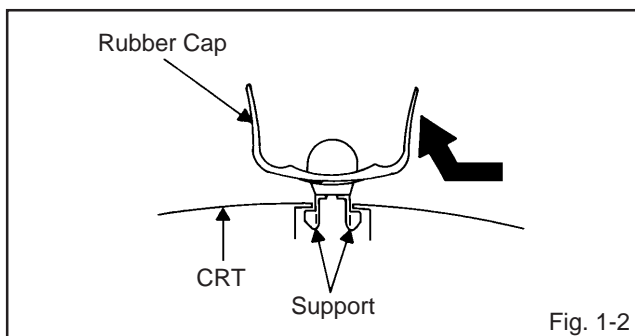


Fig. 1-2

3. After one side is removed, pull in the opposite direction to remove the other.

### NOTE

Take care not to damage the Rubber Cap.

### INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 1-3.)**

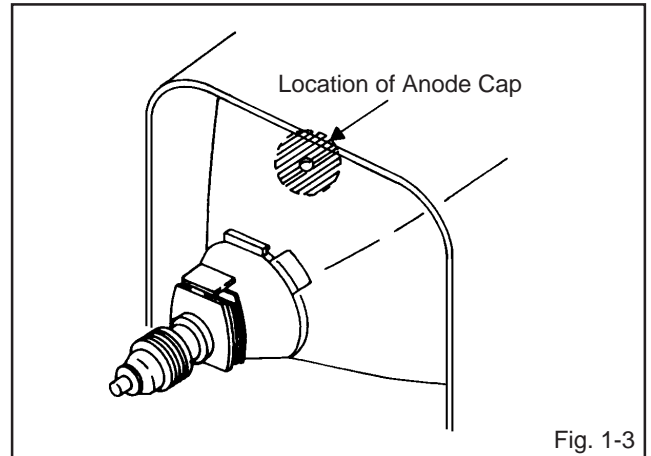


Fig. 1-3

### NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 1-4.)**

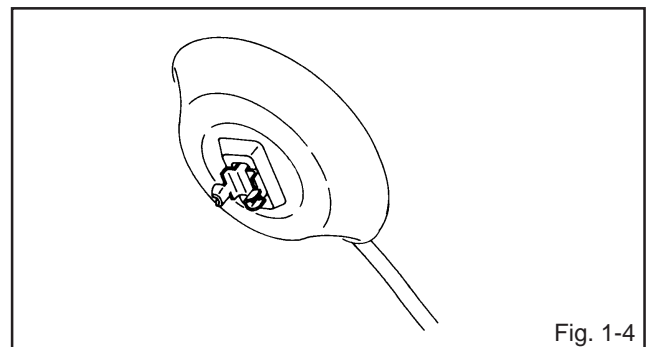


Fig. 1-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in Fig. 1-5.

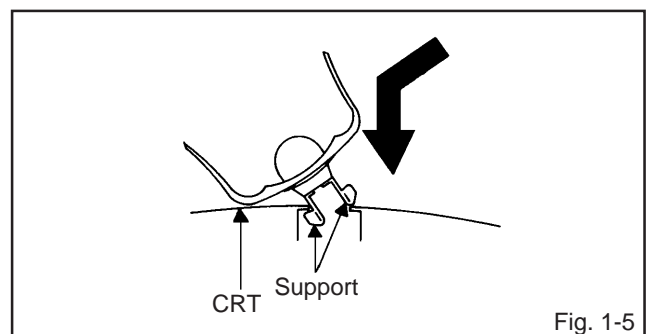


Fig. 1-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

# DISASSEMBLY INSTRUCTIONS

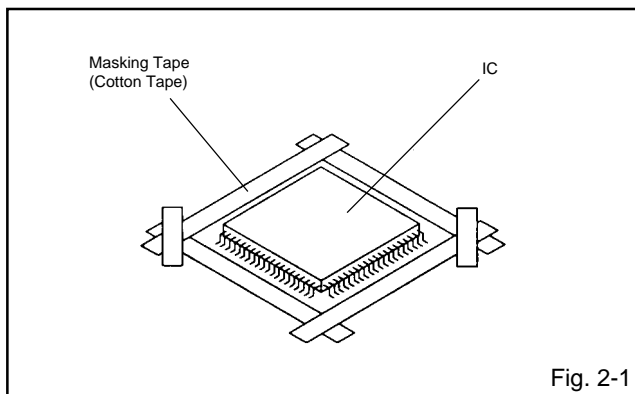
## 2. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

### REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. (Refer to Fig. 2-1.)

#### NOTE

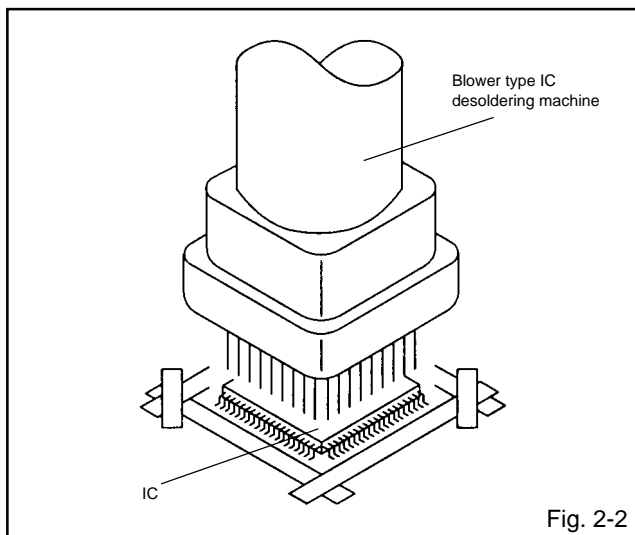
Masking is carried out on all the parts located within 10 mm distance from IC leads.



2. Heat the IC leads using a blower type IC desoldering machine. (Refer to Fig. 2-2.)

#### NOTE

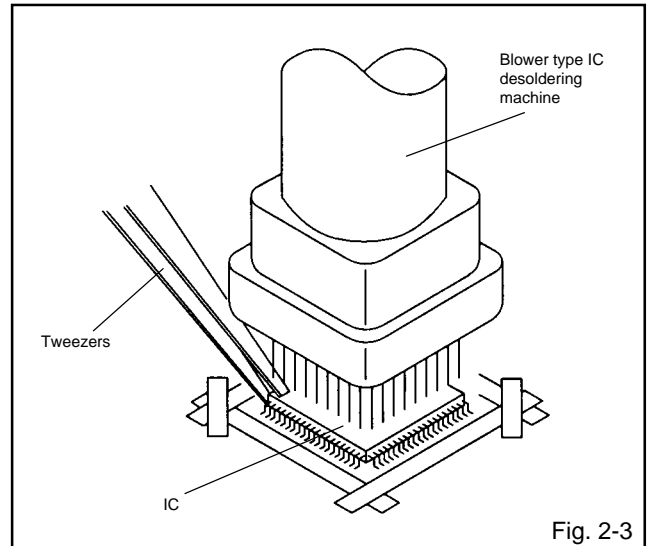
Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.



3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. (Refer to Fig. 2-3.)

#### NOTE

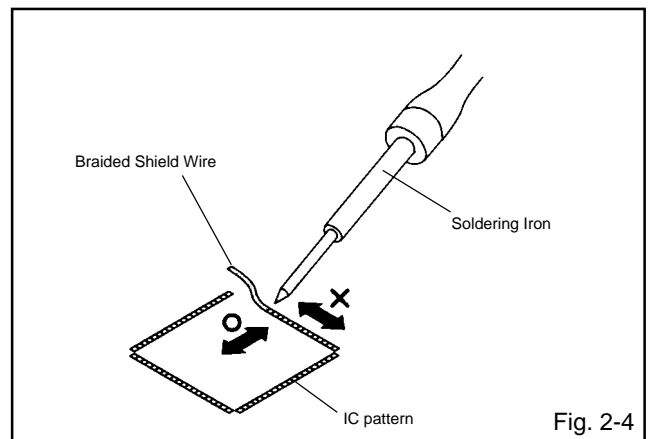
Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.



4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. (Refer to Fig. 2-4.)

#### NOTE

Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

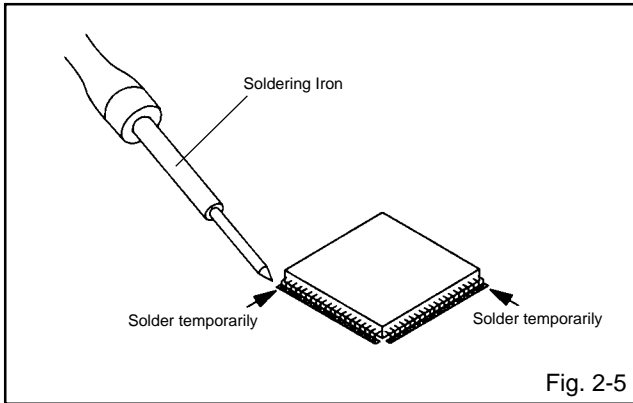




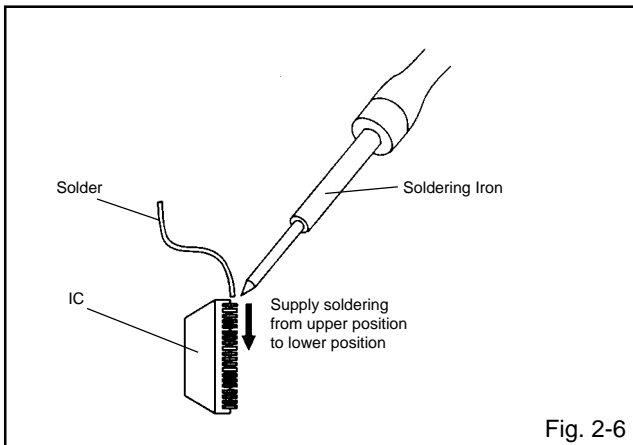
# DISASSEMBLY INSTRUCTIONS

## INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. (Refer to Fig. 2-5.)



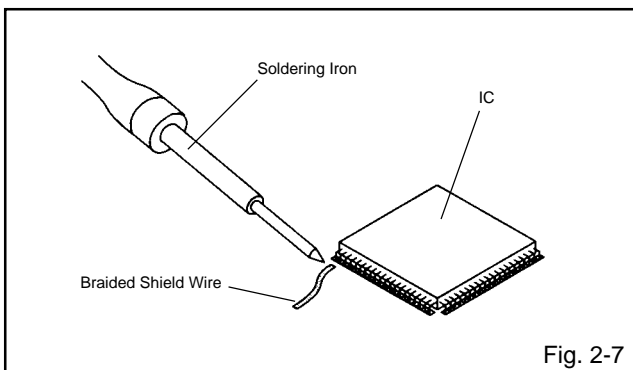
2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. (Refer to Fig. 2-6.)



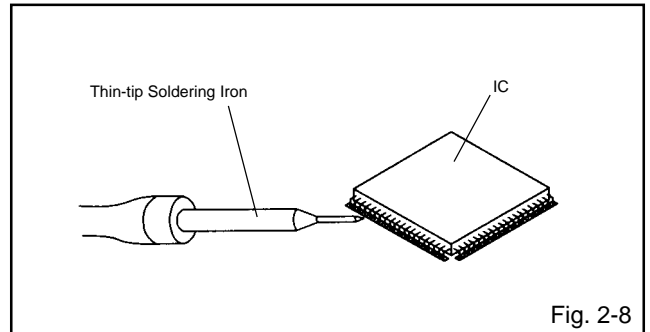
3. Absorb the solder left on the lead using the Braided Shield Wire. (Refer to Fig. 2-7.)

### NOTE

Do not absorb the solder to excess.



4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. (Refer to Fig. 2-8.)



5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass. Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

### NOTE

When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

## SERVICE MODE LIST

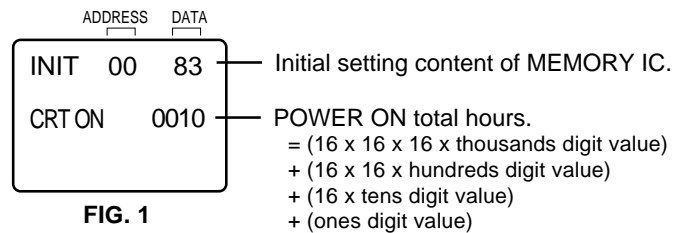
This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily. To enter the Service Mode, press both set key and remote control key for more than 1 second.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	6	POWER ON total hours is displayed on the screen. Refer to the "CONFIRMATION OF USING HOURS".  Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "NOTE FOR THE REPLACING OF MEMORY IC".
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

## CONFIRMATION OF USING HOURS

POWER ON total hours can be checked on the screen. Total hours are displayed in 16 system of notation.

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second.
3. After the confirmation of using hours, turn off the power.



## NOTE FOR THE REPLACING OF MEMORY IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B
00	88	09	A2	01	06	B3	24	09	28	24	FF	03

**Table 1**

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second. ADDRESS and DATA should appear as FIG 1.
3. ADDRESS is now selected and should "blink". Using the SET + or - keys on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using SET + or - until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input. The unit will now have the correct DATA for the new MEMORY IC.

# ELECTRICAL ADJUSTMENTS

## 1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

### CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.  
Inferior silicon grease can damage IC's and transistors.
- When replacing IC's and transistors, use only specified silicon grease.  
Remove all old silicon before applying new silicon.

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter

### On-Screen Display Adjustment

1. In the condition of NO indication on the screen.  
Press the VOL. DOWN button on the set and the Channel button (9) on the remote control for more than 1 second to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

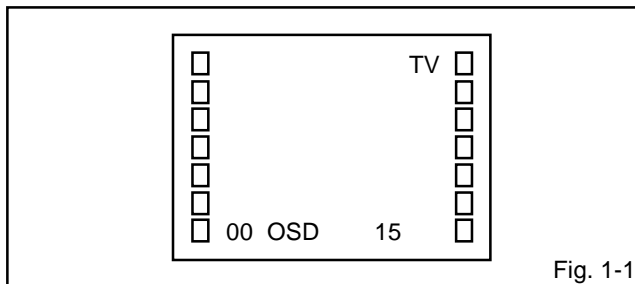


Fig. 1-1

2. Use the Channel UP/DOWN button or Channel button (0-9) on the remote control to select the options shown in **Fig. 1-2**.
3. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	OSD H	13	BRIGHTNESS
01	CUT OFF	14	CONTRAST
02	RF AGC DELAY	15	COLOR
03	VIF VCO	16	TINT
04	H VCO	17	SHARPNESS
05	H PHASE	18	FM LEVEL
06	V SIZE	19	LEVEL
07	V SHIFT	20	SEPARATION 1
08	R DRIVE	21	SEPARATION 2
09	B DRIVE	22	TEST MONO
10	R BIAS	23	TEST STEREO
11	G BIAS	24	X-RAY TEST
12	B BIAS		

Fig. 1-2

## 2. BASIC ADJUSTMENTS

### 2-1: RF AGC DELAY

1. Place the set with Aging Test for more than 15 minutes.
2. Receive a 63dB monoscope pattern.
3. Connect the digital voltmeter to **R606**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (02) on the remote control to select "RF AGC DELAY".
5. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is  $2.5 \pm 0.05V$ .

### 2-2: CUT OFF

1. Adjust the unit to the following settings.  
R.DRIVE=10, B.DRIVE=10, R.BIAS=64, G.BIAS=64, B.BIAS=64, BRIGHTNESS=100, CONTRAST=64.
2. Place the set with Aging Test for more than 15 minutes.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (01) on the remote control to select "CUT OFF".
4. Adjust the **Screen Volume** until a dim raster is obtained.

### 2-3: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

### 2-4: WHITE BALANCE

**NOTE:** Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 10 minutes.
2. Receive the white 100% signal from the Pattern Generator.
3. Using the adjustment control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (10) on the remote control to select "R.BIAS".
5. Using the VOL. UP/DOWN button on the remote control, adjust the R.BIAS.
6. Press the CH. UP/DOWN button on the remote control to select the "R.DRIVE", "B.DRIVE", "G.BIAS" or "B.BIAS".
7. Using the VOL. UP/DOWN button on the remote control, adjust the R.DRIVE, B.DRIVE, G.BIAS or B.BIAS.
8. Perform the above adjustments 6 and 7 until the white color is looked like a white.

### 2-5: SUB TINT/SUB COLOR

1. Receive the color bar pattern. (RF Input)
2. Connect the oscilloscope to **TP023**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (16) on the remote control to select "TINT".
4. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes a straight line.  
**(Refer to Fig. 2-1)**
5. Connect the oscilloscope to **TP022**.
6. Press the CH DOWN button once to set to "COLOR" mode.
7. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 110% of the white level. **(Refer to Fig. 2-2)**
8. Receive the color bar pattern. (Audio Video Input)
9. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~7.

## ELECTRICAL ADJUSTMENTS

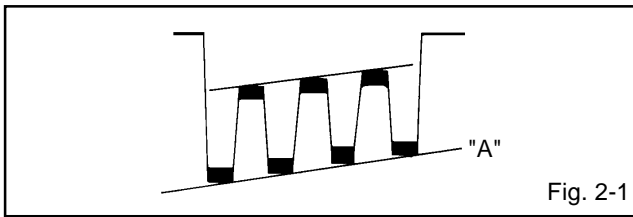


Fig. 2-1

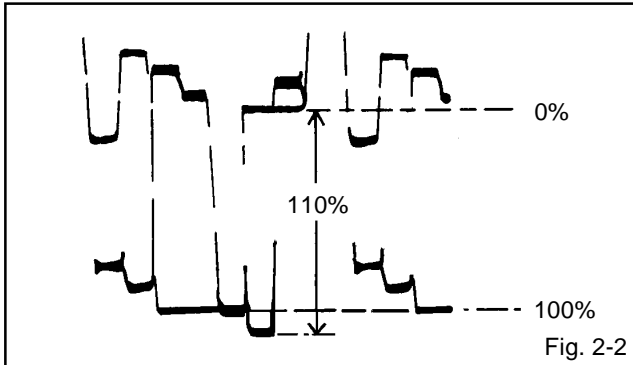


Fig. 2-2

### 2-6: HORIZONTAL PHASE

1. Receive the center cross signal from the Pattern Generator.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(05)** on the remote control to select "H PHASE".
3. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

### 2-7: VERTICAL SIZE

**NOTE:** Adjust after performing adjustments in section 2-6

1. Receive the crosshatch signal from the Pattern Generator.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(06)** on the remote control to select "V SIZE".
3. Press the VOL. UP/DOWN button on the remote control until the rectangle on the center of the screen becomes square.
4. Receive a broadcast and check if the picture is normal.

### 2-8: VERTICAL SHIFT

**NOTE:** Adjust after performing adjustments in section 2-7

1. Receive the crosshatch signal from the Pattern Generator.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(07)** on the remote control to select "V SHIFT".
3. Press the VOL. UP/DOWN button on the remote control until the horizontal line becomes fit to the notch of the shadow mask.

### 2-9: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. (**Refer to Fig. 2-3**)

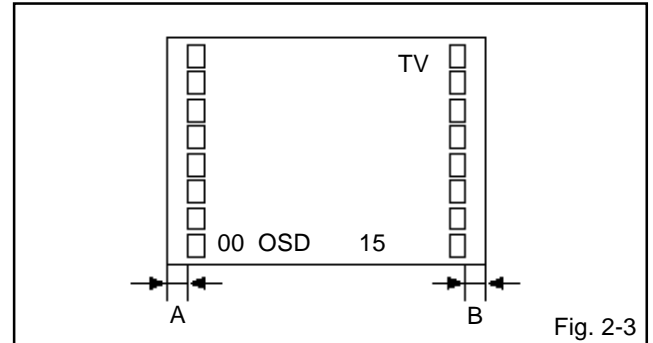


Fig. 2-3

### 2-10: VIF VCO

1. Place the set with Aging Test for more than 10 minutes.
2. Receive an 80dB monoscope pattern.
3. Connect the digital voltmeter between the **pin 5 of CP601** and the **GND**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(03)** on the remote control to select "VIF VCO".
5. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is 2.5V.

### 2-11: SUB CONTRAST NORMAL

1. Activate the adjustment mode display of **Fig. 1-1** press the channel button **(14)** on the remote control to select "CONTRAST".
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "110".
3. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2-3.

### 2-12: BRIGHTNESS

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(13)** on the remote control to select "BRIGHTNESS".
2. Press the VOL. UP/DOWN button on the remote control until the brightness step No. becomes "96".
3. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 1-2.
4. Press the TV/VIDEO button on the remote control to set to the CS mode. Then perform the above adjustments 1-2.

# ELECTRICAL ADJUSTMENTS

## 3. PURITY AND CONVERGENCE ADJUSTMENTS

### NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

### 3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**  
If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

### 3-2: PURITY

#### NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.  
Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

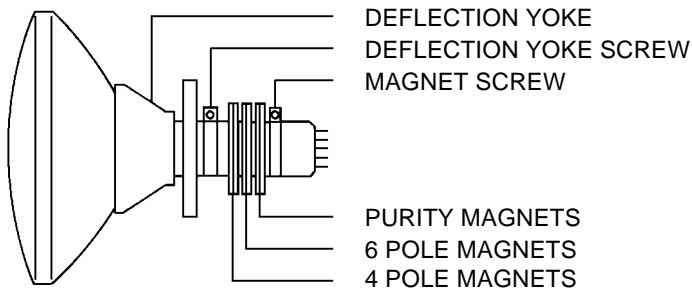


Fig. 3-1

### 3-3: STATIC CONVERGENCE

#### NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

### 3-4: DYNAMIC CONVERGENCE

#### NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**

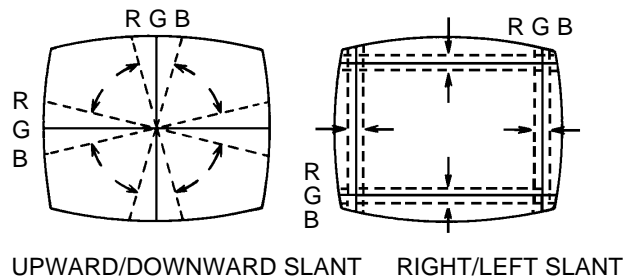


Fig. 3-2-a

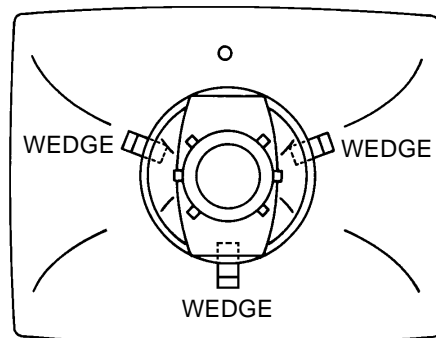
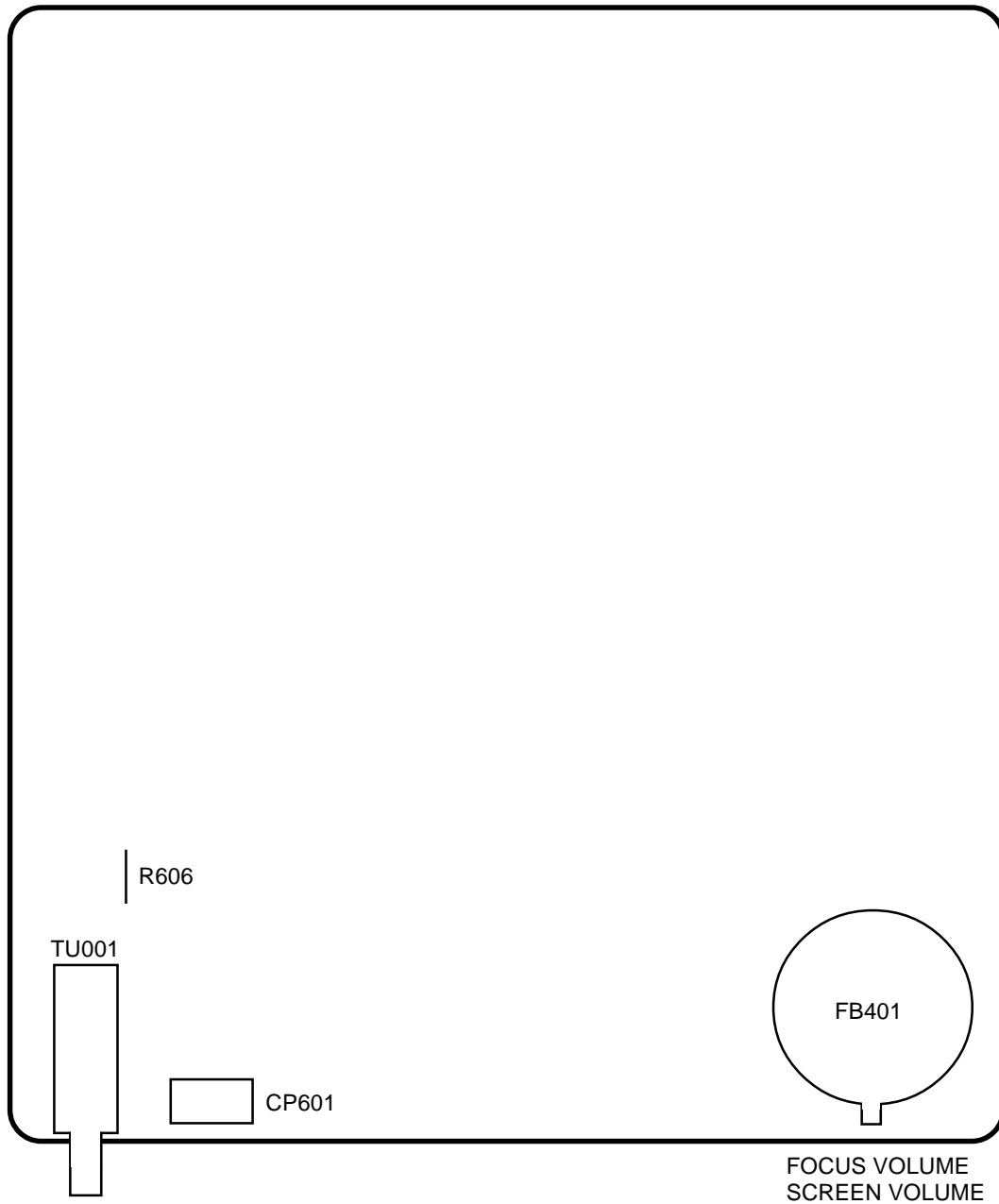
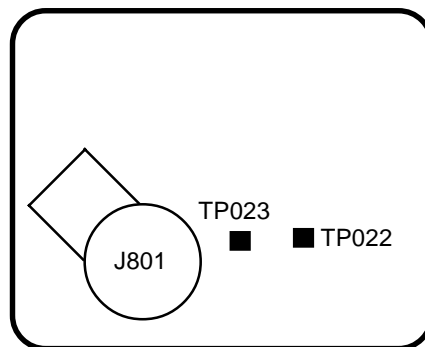


Fig. 3-2-b

# MAJOR COMPONENTS LOCATION GUIDE

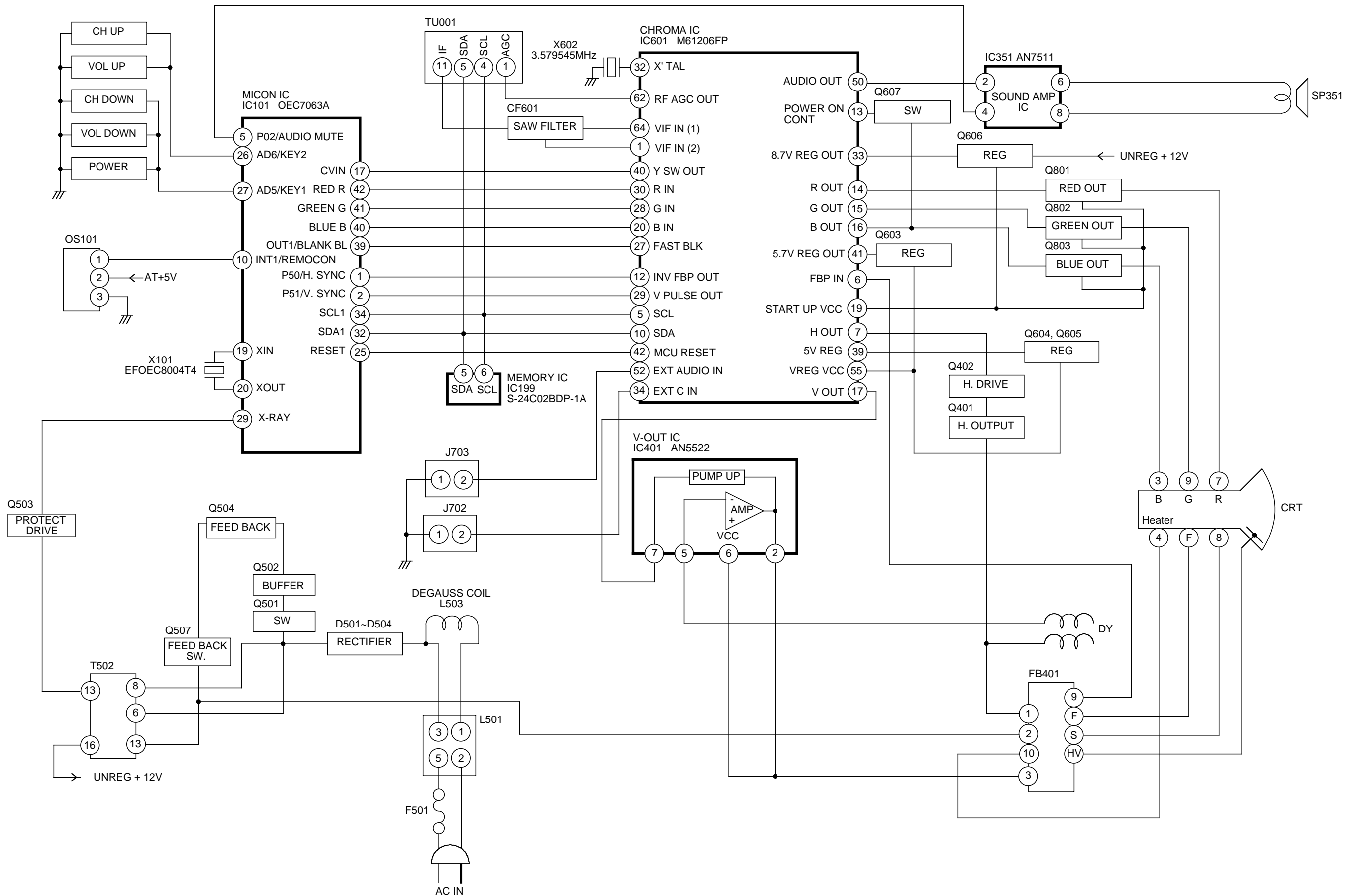


**MAIN PCB**

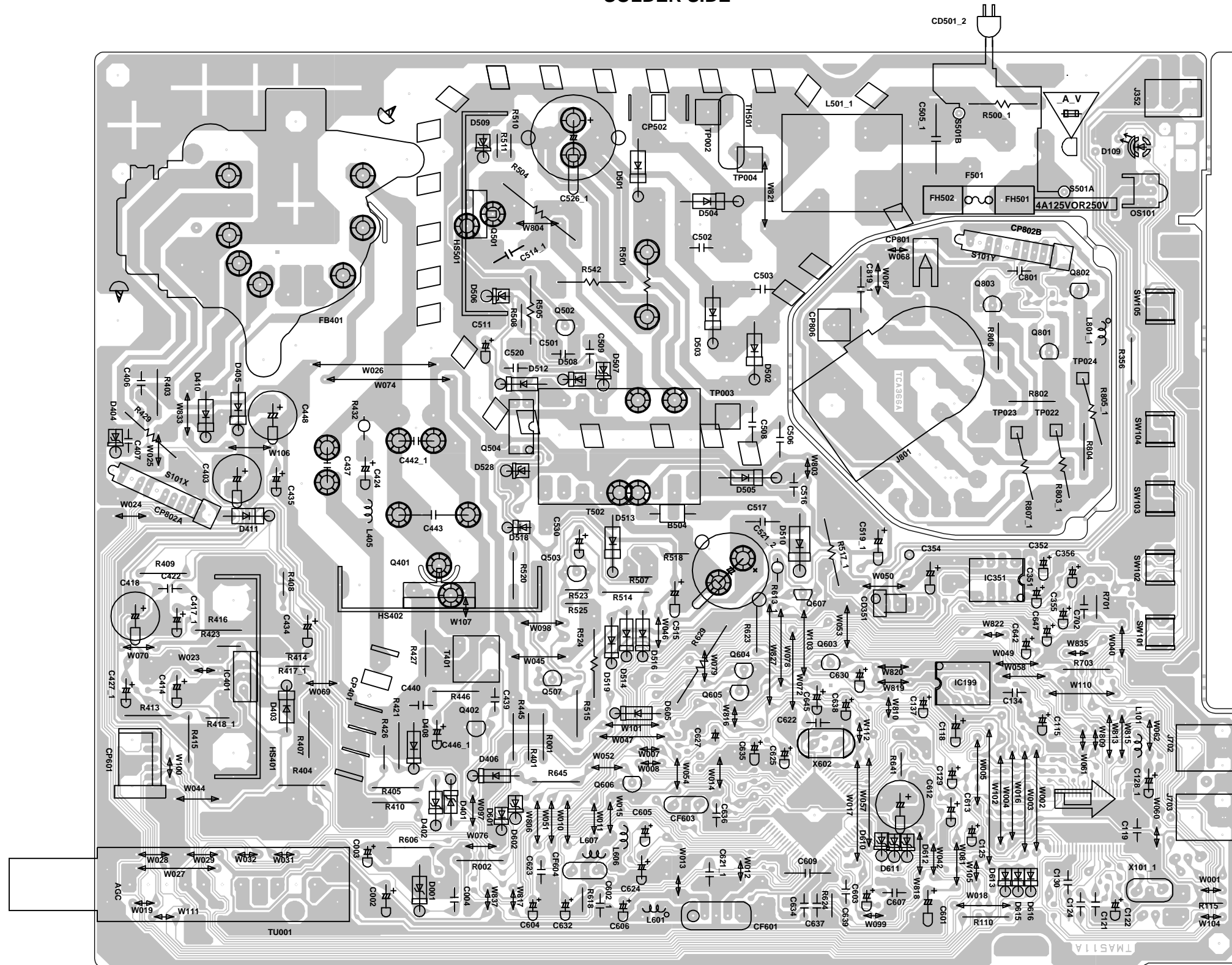


**CRT PCB**

# BLOCK DIAGRAM

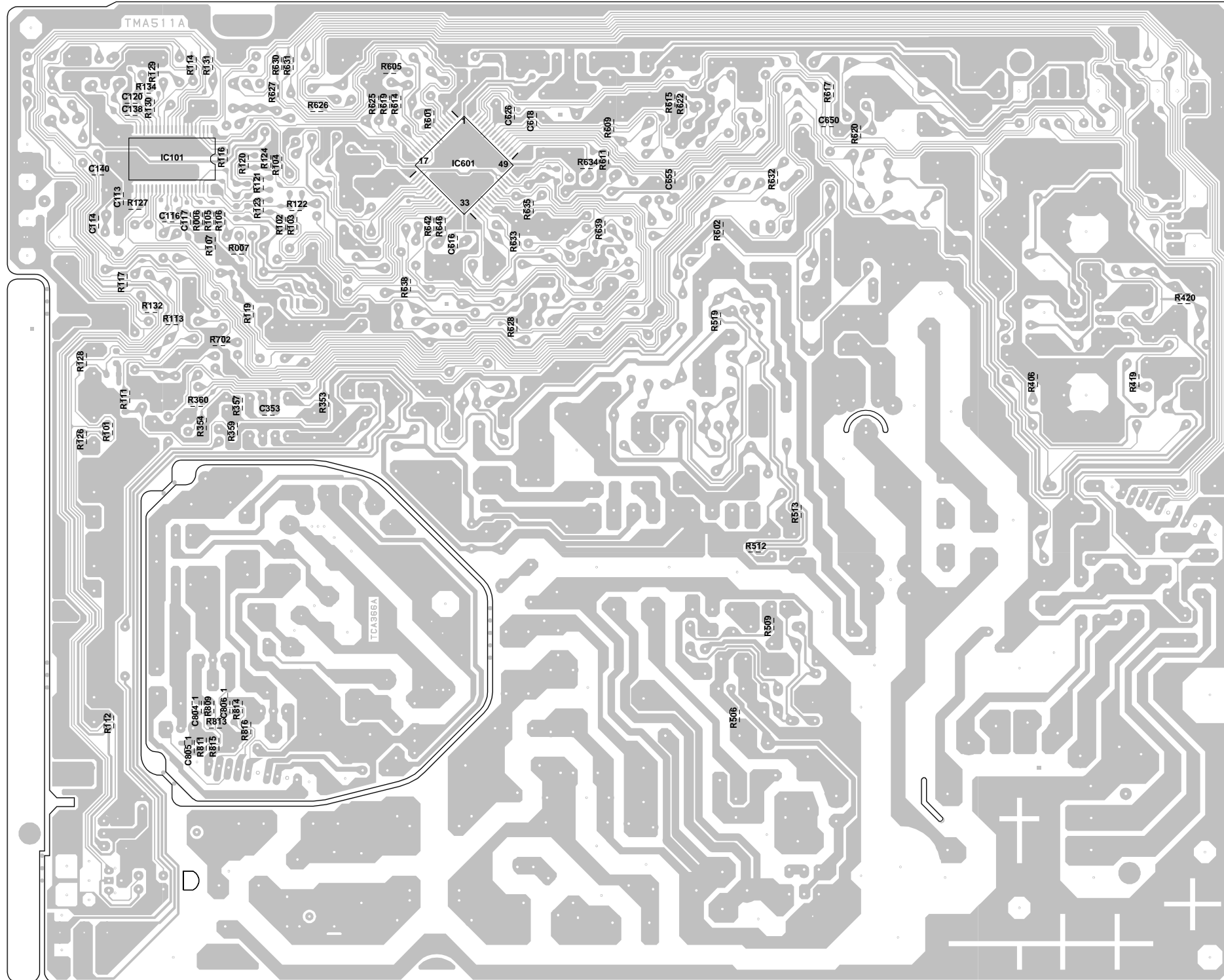


PRINTED CIRCUIT BOARDS  
MAIN/CRT (INSERTED PARTS)  
SOLDER SIDE

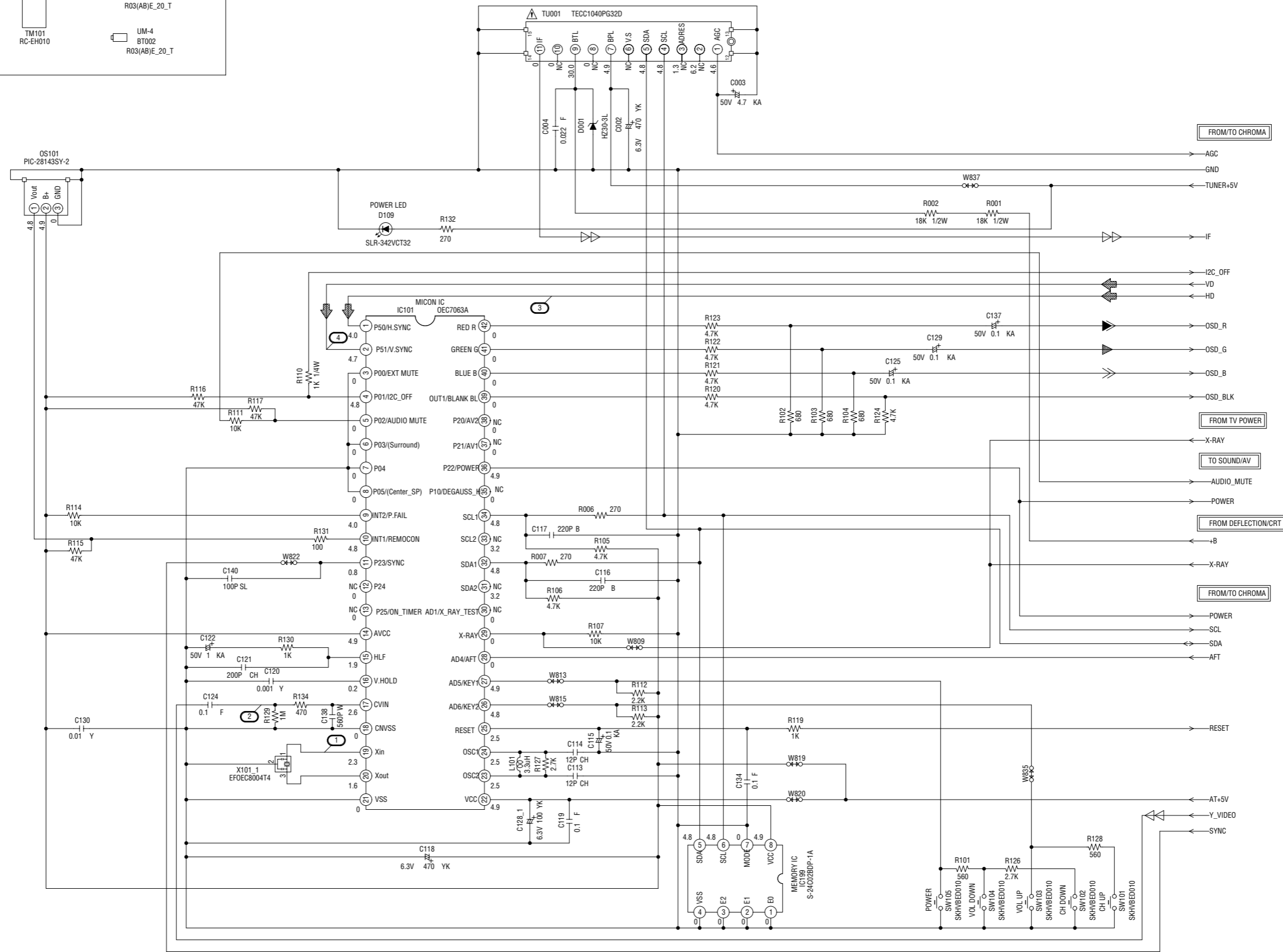
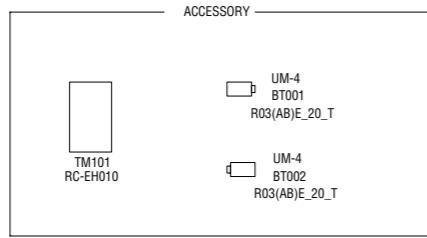




PRINTED CIRCUIT BOARDS  
MAIN/CRT (CHIP MOUNTED PARTS)  
SOLDER SIDE



# MICON/TUNER SCHEMATIC DIAGRAM (MAIN PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

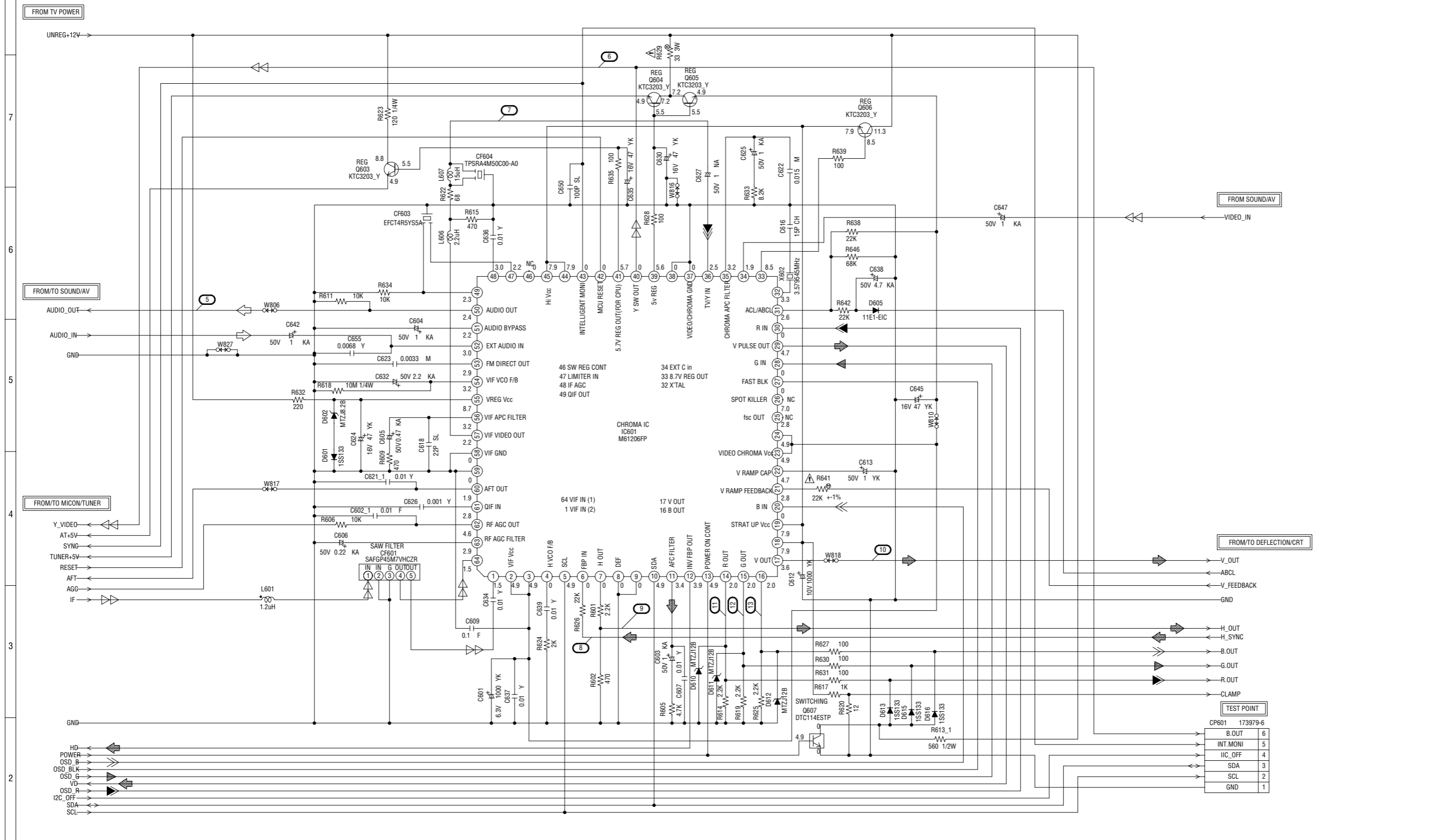
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIÈCES.

- DEFLECTION SIGNAL
- TUNER VIDEO SIGNAL
- R.SIGNAL
- G.SIGNAL
- B.SIGNAL

PCB010  
TMA511

# CHROMA SCHEMATIC DIAGRAM (MAIN PCB)



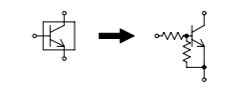
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION: DIGITAL TRANSISTOR



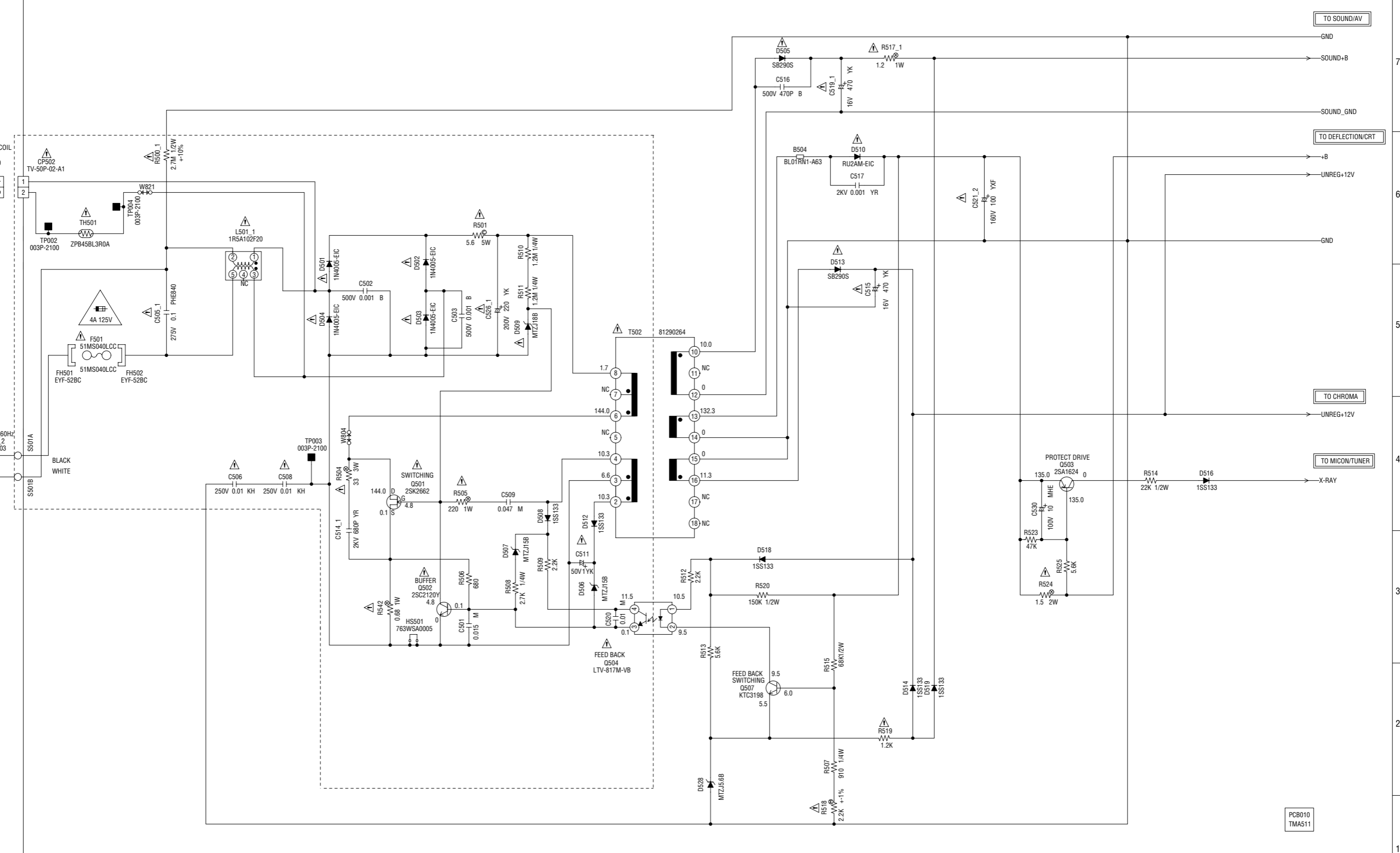
- R.SIGNAL
- G.SIGNAL
- B.SIGNAL
- AUDIO SIGNAL
- LUMINANCE SIGNAL
- DEFLECTION SIGNAL
- TUNER VIDEO SIGNAL

PCB010  
TMA511

TEST POINT	
CP601	173979-6
B.OUT	6
INT.MONI	5
IIC_OFF	4
SDA	3
SCL	2
GND	1

# TV POWER SCHEMATIC DIAGRAM (MAIN PCB)

**CAUTION:** FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE 4A 125V FUSE.  
**ATTENTION:** POUR UNE PROTECTION CONTINUE LES RISQUES D'INCENDIE N'UTILISER QUE DES FUSIBLES DE MEME TYPE 4A 125V (F501).



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

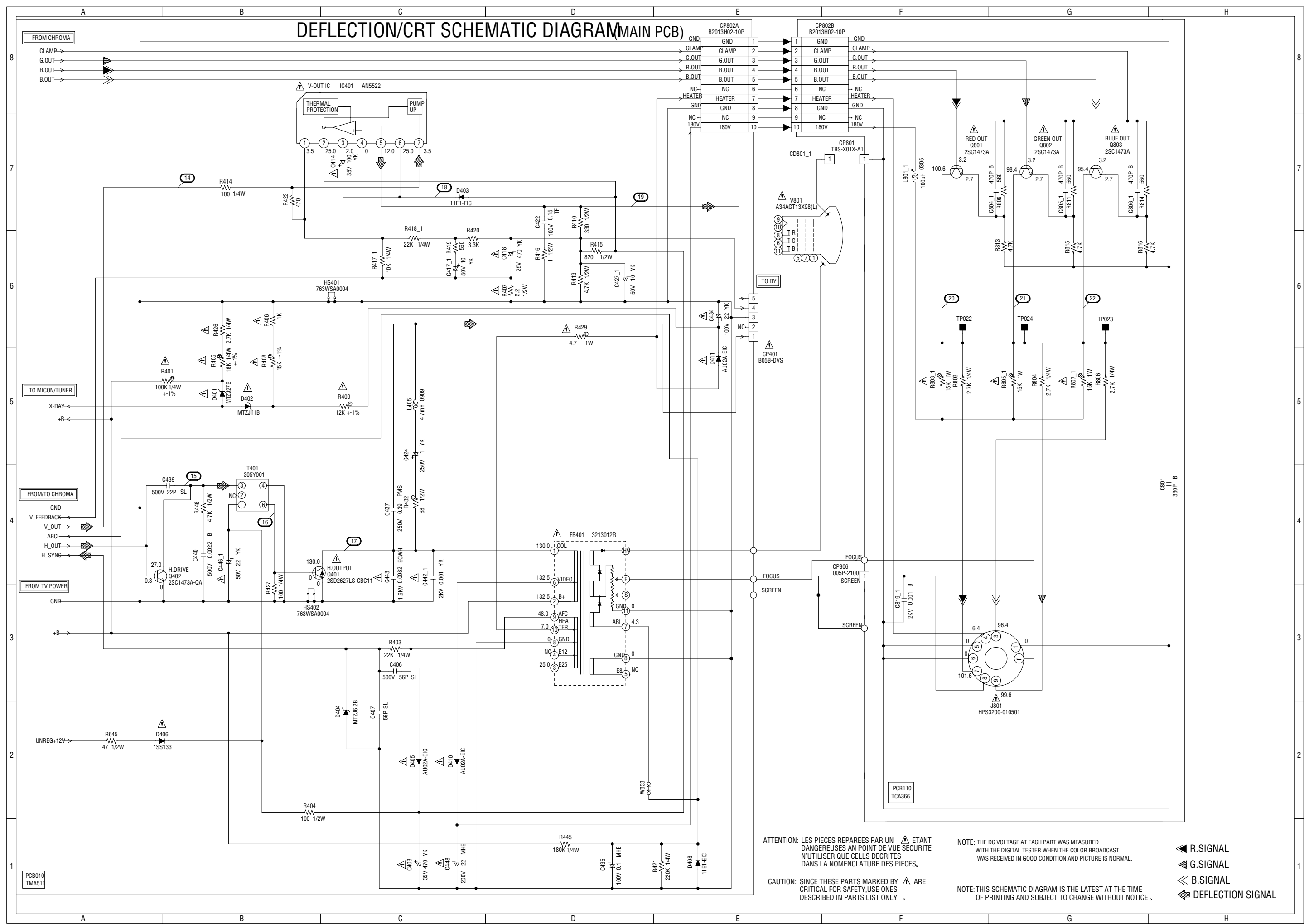
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

PCB010  
TMA511

# DEFLECTION/CRT SCHEMATIC DIAGRAM (MAIN PCB)



ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

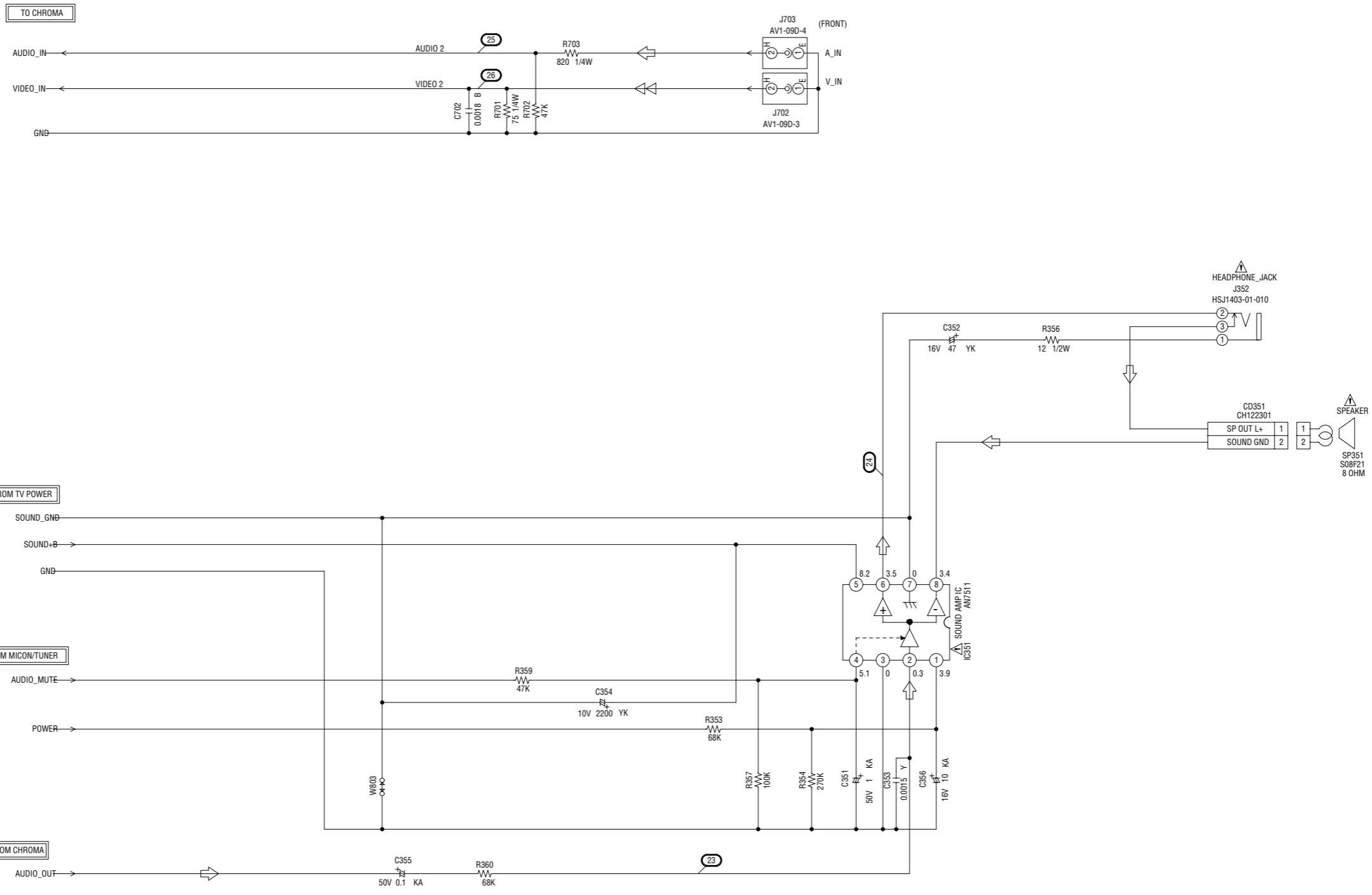
- R.SIGNAL
- G.SIGNAL
- B.SIGNAL
- DEFLECTION SIGNAL

PCB010  
TMA51

PCB110  
TCA366

C801  
330P B

# SOUND/AV SCHEMATIC DIAGRAM (MAIN PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

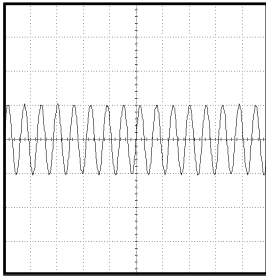
ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

TUNER VIDEO SIGNAL  
 AUDIO SIGNAL

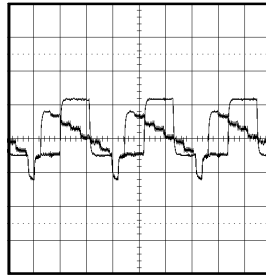
PCB010  
TMA511

# WAVEFORMS

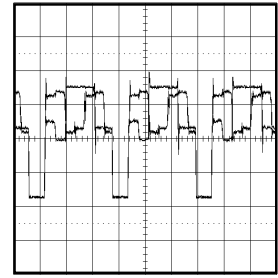
## MICON/TUNER



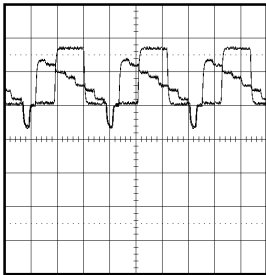
① 200mV 200ms/div



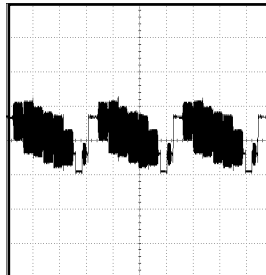
⑥ 0.5V 20μs/div



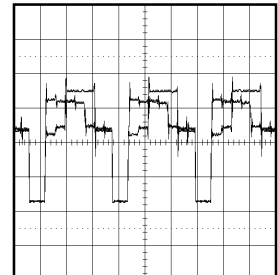
⑪ 1V 20μs/div



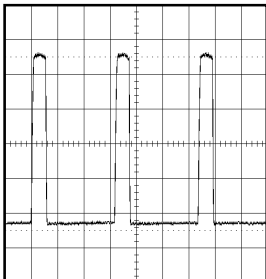
② 0.5V 20μs/div



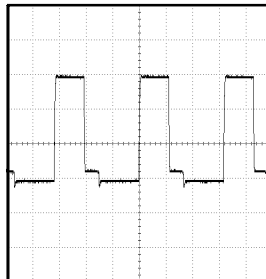
⑦ 500mV 20μs/div



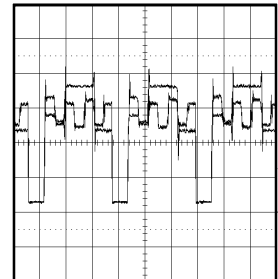
⑫ 1V 20μs/div



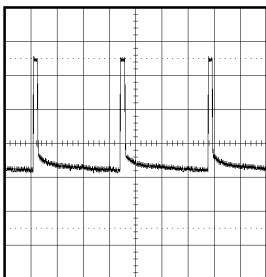
③ 200mV 20μs/div



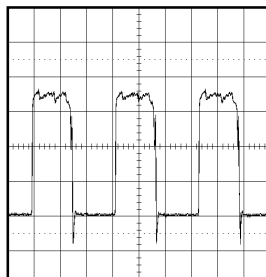
⑧ 20V 20μs/div



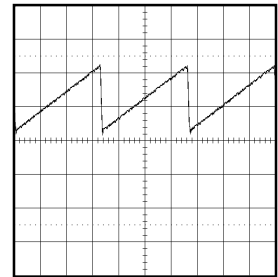
⑬ 1V 20μs/div



④ 200mV 5ms/div

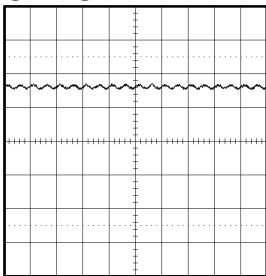


⑨ 200mV 20μs/div

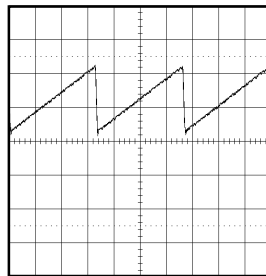


⑭ 0.5V 5ms/div

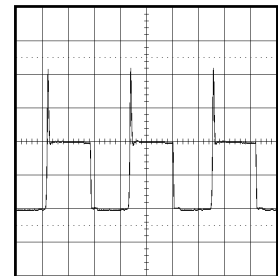
## CHROMA



⑤ 0.5V 2ms/div



⑩ 0.5V 5ms/div

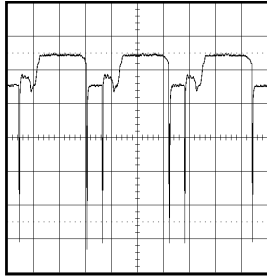


⑮ 20V 20μs/div

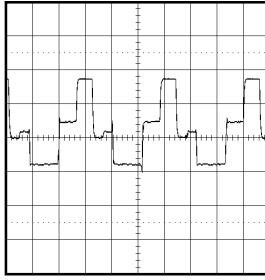
## DEFLECTION/CRT

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

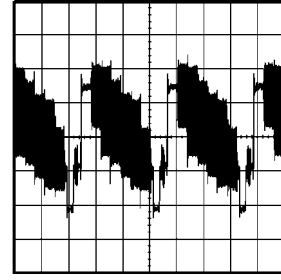
## WAVEFORMS



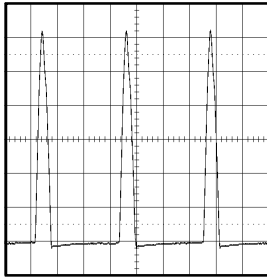
①⑥ 2V 20 $\mu$ s/div



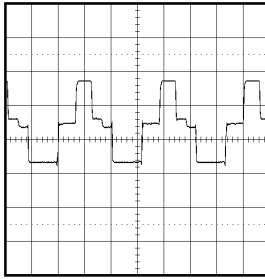
②① 50V 20 $\mu$ s/div



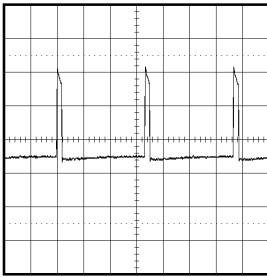
②⑥ 500mV 20 $\mu$ s/div



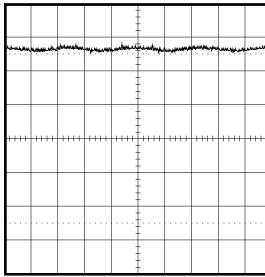
①⑦ 200V 20 $\mu$ s/div



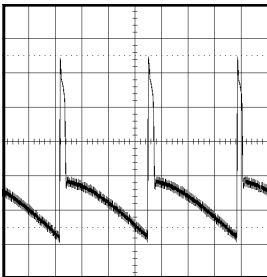
②② 50V 20 $\mu$ s/div



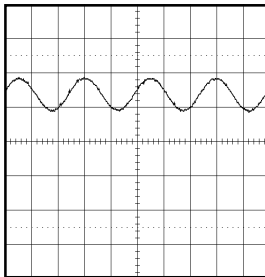
①⑧ 10V 5ms/div



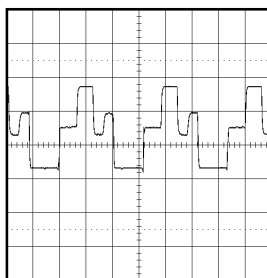
②③ 0.5V 1ms/div



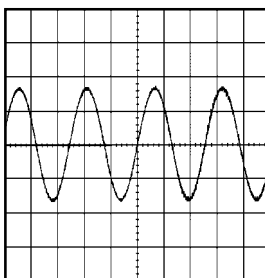
①⑨ 10V 5ms/div



②④ 1V 1ms/div



②⑤ 50V 20 $\mu$ s/div

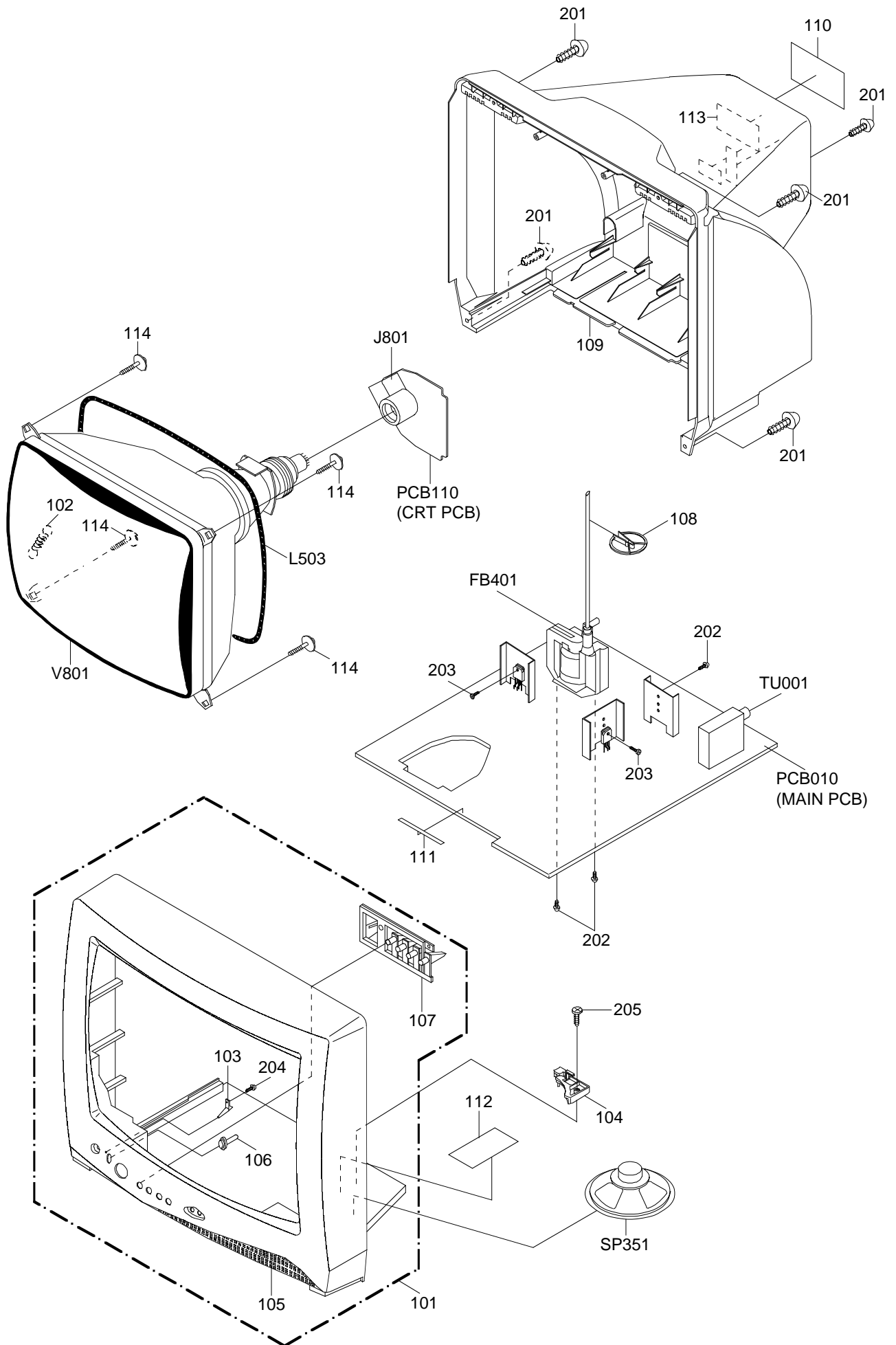


②⑤ 500mV 1ms/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.



# MECHANICAL EXPLODED VIEW



# MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	AD300815	A3J816A720	CABINET,FRONT ASSY	
102	BZ710009	741WUA0019	SPRING,EARTH	
103	AD300802	713WPAA038	GLASS,LED	
104	AD300808	735WPA0396	SPEAKER HOLDER	
105	AD300801	701WPJB228	CABINET,FRONT	
106	AD300803	713WPAA039	GUIDE,REMOCON	
107	AD300804	735WPBA226	BUTTON,FRAME	
108	BZ710260	899HV3T000	HOLDER,ANODE WIRE	
109	AD300805	702WPAA136	CABINET,BACK	
110	AD300816	722549A027	SHEET,RATING	
111	AD300843	800WQ00044	FELT SHEET	
112	AD300132	7230006818	SHEET,CAUTION	
113	AD300807	726000A016	SHEET,CRT SERVICEMAN	
114	BZ710275	8121J50B54	SCREW,TAPPING(B0) GW20	5x28
201	BZ710035	8117540A64	SCREW,TAPPING(B0) TRUSS	4x16
202	BZ710019	8109630802	SCREW,TAP TITE(B) BRAZIER	3x8
203	BZ710239	8109I30A04	SCREW,TAP TITE(B) WH7	3x10
204	BZ710030	8110630804	SCREW,TAP TITE(P) BRAZIER	3x8
205	BZ710031	8110630A04	SCREW,TAP TITE(P) BRAZIER	3x10
---	AD300809	792WHAA052	PACKAGE,TOP	
---	AD300810	792WHAA053	PACKAGE,BOTTOM	
---	AD300811	793WCDA987	GIFT BOX	
---	AD300817	A3J816A975	INSTRUCTION BOOK KIT	
---	AD300436	J3I70416	IMPORTANT SAFETY INSTRUCTIONS	
---	AD300139	J3I70715	SERVICE STATION LIST	
---	AD300140	J3I70717	REGISTRATION CARD	
---	AD300502	J3I70725	ENVELOPE	
---	AD300818	J3J81601	INSTRUCTION BOOK	
---	AD300845	JB5UD500	POLY BAG	

# ELECTRICAL REPLACEMENT PARTS LIST

Location No.	USA-TOSHIBA	Reference No.		Description
			<b>RESISTORS</b>	
▲R401	BZ210013	R4X5T4104F	R,METAL	100K OHM 1/4W
▲R405	BZ210023	R4X5T4183F	R,METAL	18K OHM 1/4W
▲R406	AD300780	R903N8102J	RC	1K OHM 1/8W
▲R407	BZ210053	R002T22R2J	RC	2.2 OHM 1/2W
▲R408	AD300037	R4X5T6153F	R,METAL	15K OHM 1/6W
▲R409	BZ210114	R4X5T6123F	R,METAL	12K OHM 1/6W
▲R426	AD300651	R002T4272J	RC	2.7K OHM 1/4W
▲R429	BZ210116	R655814R7J	R,FUSE	4.7 OHM 1W
▲R500	BZ210080	R0G3K2275K	RC	2.7M OHM 1/2W
▲R501	AD300782	R5Y2CD5R6J	R,CEMENT	5.6 OHM 5W
▲R504	AD300660	R3X28B330J	R,METAL OXIDE	33 OHM 3W
▲R505	AD300783	R3X181221J	R,METAL OXIDE	220 OHM 1W
▲R509	AD300655	R903N8222J	RC	2.2K OHM 1/8W
▲R515	AD300656	R002T2683J	RC	68K OHM 1/2W
▲R517	AD300784	R3X1811R2J	R,METAL	1.2 OHM 1W
▲R518	AD300602	R4X5T6222F	R,METAL	2.2K OHM 1/6W
▲R519	AD300658	R903N8122J	RC	1.2K OHM 1/8W
R524	BZ210097	R3X18A1R5J	R,METAL OXIDE	1.5 OHM 2W
▲R542	BZ210058	R3X181R68J	R,METAL OXIDE	0.68 OHM 1W
▲R629	AD300660	R3X28B330J	R,METAL OXIDE	33 OHM 3W
▲R803	BZ210099	R3X181153J	R,METAL OXIDE	15K OHM 1W
▲R805	BZ210099	R3X181153J	R,METAL OXIDE	15K OHM 1W
▲R807	BZ210099	R3X181153J	R,METAL OXIDE	15K OHM 1W
			<b>CAPACITORS</b>	
C354	AD300785	E02LT1222M	CE	2200 UF 10V
▲C403	BZ110149	E02LT4471M	CE	470 UF 35V
▲C414	AD300662	E02LT4101M	CE	100 UF 35V
▲C418	BZ110041	E02LT3471M	CE	470 UF 25V
▲C434	AD300064	E02LT8220M	CE	22 UF 100V
C437	BZ110136	P4J7F3394J	CMPP	0.39 UF 250V PMS
C442	BZ110002	C01BBP713K	CC	0.001 UF 2KV BP
▲C443	BZ110046	P414F9822H	CMPP	0.0082UF 1.6KV ECWH
▲C446	BZ110157	E02LT5220M	CE	22 UF 50V
▲C448	AD300664	E5EZTC220M	CE	22 UF 200V
▲C502	BZ110080	C0J0B0513K	CC	0.001 UF 500V B
▲C503	BZ110080	C0J0B0513K	CC	0.001 UF 500V B
▲C505	BZ110145	P2472B104M	CMP	0.1 UF 275V PHE840
▲C506	AD300787	CB3LF0M14M	CC	0.01 UF 250V
▲C508	AD300787	CB3LF0M14M	CC	0.01 UF 250V
▲C511	AD300788	E02LU5010M	CE	1 UF 50V
C514	BZ110122	C0JLYR7U2K	CC	680 PF 2KV YR
▲C515	BZ110081	E02LT2471M	CE	470 UF 16V
C517	AD300077	C0JLYR713K	CC	0.001 UF 2KV YR
▲C519	BZ110081	E02LT2471M	CE	470 UF 16V
C521	AD300060	E62NFB101M	CE	100 UF 160V
▲C526	BZ110089	E02LFC221M	CE	220 UF 200V
C819	AD300078	C0JBB0713K	CC	0.001 UF 2KV B
			<b>DIODES</b>	
D001	AD300072	D94TA30013	DIODE,ZENER	HZ30-3L TD
D109	BZ410054	0021721150	LED	SLR-342VCT32
▲D401	AD300069	D97U02701B	DIODE,ZENER	MTZJ27B T-77
▲D402	AD300071	D97U01101B	DIODE,ZENER	MTZJ11B T-77
D403	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
D404	BZ410066	D97U06R21B	DIODE,ZENER	MTZJ6.2B T-77
▲D405	BZ410063	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
▲D406	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D408	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
▲D410	BZ410063	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
▲D411	BZ410063	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
▲D501	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
▲D502	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
▲D503	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
▲D504	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
▲D505	BZ410076	D2WXB290S0	DIODE,SILICON	SB290S
D506	AD300670	D97U01501B	DIODE,ZENER	MTZJ15B T-77
D507	AD300670	D97U01501B	DIODE,ZENER	MTZJ15B T-77
D508	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
▲D509	AD300671	D97U01801B	DIODE,ZENER	MTZJ18B T-77
▲D510	BZ410080	D2WXR02AM0	DIODE,SILICON	RU2AM-EIC
D512	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
▲D513	BZ410076	D2WXB290S0	DIODE,SILICON	SB290S
D514	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D516	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D518	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D519	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D528	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D601	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77

# ELECTRICAL REPLACEMENT PARTS LIST

Location No.	USA-TOSHIBA	Reference No.	Description
<b>DIODES</b>			
D602	BZ410058	D97U08R21B	DIODE,ZENER
D605	BZ410043	D2WT011E10	DIODE,SILICON
D610	AD300070	D97U01201B	DIODE,ZENER
D611	AD300070	D97U01201B	DIODE,ZENER
D612	AD300070	D97U01201B	DIODE,ZENER
D613	BZ410006	D1VT001330	DIODE,SILICON
D615	BZ410006	D1VT001330	DIODE,SILICON
D616	BZ410006	D1VT001330	DIODE,SILICON
<b>ICS</b>			
IC101	AD300672	I56F07063A	IC
IC199	AD300790	A3J813A015	IC
△IC351	BZ611001	I01DP75110	IC
△IC401	BZ611053	I01TD55220	IC
IC601	BZ611055	I06FC61206	IC
<b>TRANSISTORS</b>			
△Q401	BZ510036	TD30026270	TRANSISTOR, SILICON
△Q402	AD300791	TCKT1473AQ	TRANSISTOR, SILICON
△Q501	AD300675	T25FK26620	TRANSISTOR, FIELD EFF
△Q502	BZ510044	TC5T021204	TRANSISTOR, SILICON
Q503	BZ510004	TA3T016240	TRANSISTOR, SILICON
△Q504	BZ410088	0002E00610	PHOTO COUPLER
Q507	BZ510069	TCATC31980	TRANSISTOR, SILICON
Q603	BZ510070	TCAT032034	TRANSISTOR, SILICON
Q604	BZ510070	TCAT032034	TRANSISTOR, SILICON
Q605	BZ510070	TCAT032034	TRANSISTOR, SILICON
Q606	BZ510070	TCAT032034	TRANSISTOR, SILICON
Q607	BZ510023	TNYTB03001	COMPOUND TRANSISTOR
△Q801	AD300794	TCKT1473A0	TRANSISTOR, SILICON
△Q802	AD300794	TCKT1473A0	TRANSISTOR, SILICON
△Q803	AD300794	TCKT1473A0	TRANSISTOR, SILICON
<b>COILS &amp; TRANSFORMERS</b>			
L101	AD300676	021LA63R3K	COIL
L405	BZ310004	021679472K	COIL
△L501	AD300677	029T00A7M1	COIL, LINE FILTER
△L503	AD300795	028R140030	COIL, DEGAUSS
L601	AD300678	0216731R2K	COIL
L606	BZ310009	021LA62R2K	COIL
L607	BZ310043	021LA6150K	COIL
L801	BZ310041	02167F101J	COIL
T401	BZ310080	03305Y0018	TRANS, HORIZONTAL DRIVE
△T502	AD300796	0481290264	TRANSFORMER, SWITCHING
<b>JACKS</b>			
J352	AD300797	0602121012	JACK, RCA 3.5
J702	AD300680	060Q401077	RCA JACK
J703	AD300681	060Q401076	RCA JACK
△J801	BZ614004	066X120014	SOCKET, CATHODE RAY TUBE
<b>SWITCHES</b>			
SW101	BZ612001	0504201T31	SWITCH, TACT
SW102	BZ612001	0504201T31	SWITCH, TACT
SW103	BZ612001	0504201T31	SWITCH, TACT
SW104	BZ612001	0504201T31	SWITCH, TACT
SW105	BZ612001	0504201T31	SWITCH, TACT
<b>P.C. BOARD ASSEMBLIES</b>			
PCB010	AD300813	A3J816A01A	PCB ASS'Y
PCB110	AD300814	A3J816A11A	PCB ASS'Y
<b>MISCELLANEOUS</b>			
B504	BZ310016	024AT03655	CORE BEADS
CD351	AD300684	06CH122301	CORD, CONNECTOR
△CD501	AD300685	120R414903	CORD, AC BUSH
CF601	AD300621	1022T45R73	FILTER, SAW
CF603	BZ613015	1011T4R504	FILTER, CERAMIC
CF604	AD300686	1012T4R519	FILTER, CERAMIC TRAP
△CP401	BZ614020	069X450029	CONNECTOR PCB SIDE
△CP502	BZ614018	069W420029	CONNECTOR PCB SIDE
CP601	BZ614135	0694260139	CONNECTOR PCB SIDE
CP801	AD300800	069W010030	CONNECTOR PCB SIDE
CP806	BZ614058	069W010010	CONNECTOR PCB SIDE
CP802A	BZ614273	067U010049	WIRE HOLDER
CP802B	BZ614273	067U010049	WIRE HOLDER
EL001	BZ614043	124116281A	EYE LET
EL002	BZ614044	124120301A	EYE LET
△F501	AD300688	081PC04004	FUSE
△FB401	BZ614111	043213012R	TRANSFORMER, FLYBACK
FH501	BZ614005	06710T0006	HOLDER, FUSE
FH502	BZ614005	06710T0006	HOLDER, FUSE
OS101	BZ614171	077Q014003	REMOTE RECEIVER
△SP351	AD300689	070Y132018	SPEAKER

# ELECTRICAL REPLACEMENT PARTS LIST

Location No.	USA-TOSHIBA	Reference No.	Description
<b>COILS &amp; TRANSFORMERS</b>			
▲TH501	BZ410079	DF5EL3R0A0	DEGAUSS ELEMENT ZPB45BL3R0A
TM101	AD300690	076N0EH010	TRANSMITTER RC-EH010
▲TU001	BZ610125	0145K00055	TUNER,VHF-UHF TECC1040PG32D
▲V801	BZ614141	098Q1404B2	CRT W/DY A34AGT13X98(L)
X101	AD300624	1001T8R004	CERAMIC,OSCILLATOR EFOEC8004T4
X602	BZ613004	100CT3R505	CRYSTAL HC-49/C
RESISTOR			
	RC.....	CARBON RESISTOR	
CAPACITORS			
	CC.....	CERAMIC CAPACITOR	
	CE.....	ALUMI ELECTROLYTIC CAPACITOR	
	CP.....	POLYESTER CAPACITOR	
	CPP.....	POLYPROPYLENE CAPACITOR	
	CPL.....	PLASTIC CAPACITOR	
	CMP.....	METAL POLYESTER CAPACITOR	
	CMPL.....	METAL PLASTIC CAPACITOR	
	CMPP.....	METAL POLYPROPYLENE CAPACITOR	

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